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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,577	02/01/2001	Akira Oosawa	Q61225	5559

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SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213

EXAMINER	
AZARIAN, SEYED H	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/774,577	OOSAWA, AKIRA	
	Examiner	Art Unit	
	Seyed Azarian	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 February 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

RESPONSE TO AMENDMENT

1. Applicant's amendment filed, 1/10/20065, see page 2 through page 9 of the remarks, With respect to the rejection of claims 1-69 have been Fully considered but they are not persuasive.

2. Applicant alleges that Kano does not teach or suggest, "**recording history data on past inter-image objects**" in claim 1.

In response to applicant's argument against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Contrary to the applicant's assertion, Kano discloses, "**locations of the detected possible interval changes**" (history data) can be indicated using notations such as arrows superimposed (recorded) "**on**" the subtraction image (processed image) or the **original image** (s) (base image(s), also other characteristics such as size, shape, or other significant features about the interval changes (history data) (column 14, lines 40-46).

Also, Kano discloses "providing changes between a pair of temporally sequential medical images (base images) and detecting abnormal regions where the **two images are matched** with each other (column 2, lines 29-49)

The Examiner indicates, Fig. 15A, 15B and 16A, 16B, pair of same images for a particular **patient where the earlier image was taken two years earlier (past inter-image)**, and difference image (subtraction) is shown, which the existence of various artifacts in this figure is prominent due to the mismatch of the anatomical features, also Fig. 16A shows the

difference in amount of cardiomegaly, same image (identical), taken two years earlier (recording history), (column 13, lines 21-46), also providing changes between a pair of temporally sequential medical images and detecting abnormal regions where the two images are matched with each other (column 2, lines 29-49).

Further, Kano discloses Fig. 11A, the local matching is performed and generate outputs result to memory 170, then a curve fitting calculator receives the output of memory 170 and performs the curve fitting function described above, and result stored in memory 190 which then outputs to memory 200 (recording on past inter-image), then performed the subtraction calculator device. The result of this process is stored in memory 220 and display for viewing and comparison to an output. Fig. 11B, as shown analyzer is connected in series between the memories, and additional memory is provided for storing the results of local matching for generation of the appropriate weighting factors (column 12, line 55 through column 13, line 18), and finally a pair of images for a particular patent where "the earlier image was taken **two years earlier" (recording history)**, for comparison (column 13, lines 20-35), (in the specification page 4, line 9, the past inter-image operations and output the required processed image effectively and appropriately **referring to the history data**).

Furthermore, in response to applicant's argument, regarding claim 64,that Kano "does not teach, identifying the base images as claimed". The Examiner disagrees and indicates, Kano discloses the subtraction images can be viewed by the radiologist as a final data output, which **displayed** along with the original images for comparison purposes of the original images with subtraction images can be **displayed** either as softcopy such as video displays or as hardcopy, to

detect or identify interval changes, which can thus provide information to radiologists (column 14, lines 17-46).

However Kano clearly discloses that notations **(history data)** can be superimposed **(recorded)** on the subtraction image, but applicant's argument that (history date on past inter-image), not limited to file names and location, also (**patient identification**), which is not recited in body of claim1. For this feature, examiner using this reference, supplied with this action: Hiyama (U.S. Patent Number 5,379,757) in the same field of medical imaging discloses (column 68, lines 64-68, through column 69, lines 1-5, from the data input part 839 **patient data such as name, date of birth, image record (history data)** are superimposed **(recorded)** on the RGB signals (inter-image)). Furthermore, Hiyama states (column 75, lines 64-68, through column 76, lines 1-7 that user inputs from the data input part 839 (history data) an inter-image reference recording order (past inter-image) and a control signal is transmitted to the respective memories). It would have been obvious to one skilled in the art at the time the invention was made to modify Kano with the teachings of Hiyama so that the superimposed notations would include patient history data on an inter-image, which can easily be implements in diagnostic device such as X-ray machine.

Claim Rejections - 35 USC § 103

3. Following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-69, are rejected under 35 U.S.C. 103(a) as being anticipated over Kano et al (U.S. patent 5,359,513) in view of Hiyama et al (U.S. patent 5,379,757).

Regarding claim 1, Kano discloses an inter-image operation method comprising the steps of carrying out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object to obtain processed image data therefrom (column 2, lines 29-49, providing changes between a pair of temporally sequential medical images and detecting abnormal regions where the two images are matched with each other, also Fig. 11A, column 12, lines 44-59, as shown digital image input device supplies the same digitizes image to each of image memories 110 and 120).

However Kano does not explicitly state "recording history data on past inter-image operations". On the other hand Hiyama in the same field of X-ray system teaches thermography scan which stored in memory and may be compared to past scans as stored in the archival memory (or designated recording). The result of such analysis is recorded in data memory and the past and present scan result may also be displayed (column 75, lines 64-68, through column 76, lines 1-7).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention was made, to modify Kano invention according to the teaching of Hiyama because it provides system for automatically making recommendations for performing and evaluation diagnostic comparison in order to make a recommendations for further testing techniques that determined based on the differences between the location of the object, so that the superimposed notations would include patient history data on an inter-image, which can easily be implements in diagnostic device such as X-ray machine.

Regarding claim 2, Kano discloses an inter-image operation method according to claim 1, wherein the history data on the past inter-image operation are attached to the processed image (Fig. 11A, column 12, line 55 through column 13, line 18, 11A, the local matching is performed and generate outputs result to memory 170, then a curve fitting calculator receives the output of memory 170 and performs the curve fitting function described above, and result stored in memory 190 which then outputs to memory 200 (recording on past inter-image), then performed the subtraction calculator device. The result of this process is stored in memory 220 and display for viewing and comparison to an output. Fig. 11B, as shown analyzer is connected in series between the memories, and additional memory is provided for storing the results of local matching for generation of the appropriate weighting factors).

Regarding claim 3, Kano discloses an inter-image operation method according to Claim 1, wherein the history data on the past inter-image operations are attached to the processed image data obtained through the inter-image operation (column 4, lines 57-68, a pair of first and second images (step 10, 20), image registration and then subtraction).

Regarding claim 4, Kano discloses an inter-image operation method according to Claim 1, wherein the history data on the past inter-image operations are attached to each of said two or more sets of the base image data used for calculating the processed image data (column 5, lines 34-47 refer to determine and calculation of shift mapping).

Regarding claim 5, Kano discloses an inter-image operation method according to Claim 1, wherein the history data on the past inter-image operations include information identifying the base images each represented by one of said two or more sets of the base image data used for

calculating the processed image data (column 5, lines 1-22, to obtain improve of image registration between the two images).

Regarding claim 9, Kano discloses an inter-image operation method according to Claim 1, wherein the history data on the past inter-image operations include such data indicating whether or not the processed image data on a certain processed image have already been obtained (column 5, lines 24-33, matching between each corresponding pair of ROIs and comparing the result and column 8, lines 59-66, best match location are selected to perform a fine –search for local matching in the second step for accuracy).

Regarding claim 13, Kano discloses an inter-image operation method according to Claim 9, wherein the history data on the past inter-image operations include information on recording sites of the processed image data obtained in the past, and wherein a desired set of the processed image data stored at the recording site thereof is fetched and outputted instead of conducting the inter-image operation to recalculate the desired set of the processed image data, if it was found by referring to the history data that the desired set of processed image data had already been obtained (column 12, lines 55-68, matching is performed in calculator 150, which output the result to generator 160 and calculation to memory 170, where the result stored in memory 190).

Regarding claim 25, Kano discloses an inter-image operation method according to any one of Claims 1-24, wherein the inter-image operation includes a subtraction operation on a pixel-by-pixel basis between said two or more sets of the base image data (Fig. 1, steps 10 and 20. Digital images 1 and 2 are obtained at different points in time, and column 12, lines 29-43, subtraction image can be created by subtracting the pixel values).

Regarding claim 26, Kano discloses an inter-image operation method according to any one of Claims 1-24, wherein each of said two or more sets of the base image data is a set of data representing an original image (Fig. 14A-14D, column 13, lines 48-55, using two temporally sequential original images).

Regarding claim 28, Kano discloses an inter-image operation method according to any one of Claims 1-24, wherein the base images each represented by one of said two or more sets of the base image data are taken at different points in time (column 15, lines 64-68, determining differences between first and second images during time interval).

Regarding claim 30, Kano discloses an inter-image operation method according to any one of claims 1-24, wherein each of said two or more sets of the base image data represents a radiation image for medical use (Fig. 14A, column 4, lines 25-26, shows a radiographic image of a patient's chest X-ray (refer to radiation image)).

Regarding claim 63, Kano discloses an image display method comprising the steps of displaying an image on a prescribed image display, said image being a processed image represented by processed image data obtained by carrying out an inter-image operation between two or more sets of base image data each representing a distinct base image of an identical object, and displaying information. Identifying the two or more base images each represented by one of said two or more sets of the base image data together with the processed image (column 14, lines 17-28, refer to displaying).

Regarding claim 68, Kano discloses the apparatus of claim 67, wherein the inter-image operation means searches the database by the header information to determine whether the inter-image operation has been carried out (column 5, lines 60 through column 6, line 12).

Regarding claims 6, 10, 14, 18, 22, 33, 37, 41, 45, 49 and 53, it recites similar limitation as claim 2 is similarly analyzed.

Regarding claims 7, 11, 15, 19, 23, 34, 38, 42, 46, 50 and 54, it recites similar limitation as claim 3 is similarly analyzed.

Regarding claims 8, 12, 16, 20, 24, 35, 39, 43, 47, 51, 55, 65 and 67, it recites similar limitation as claim 4 is similarly analyzed.

Regarding claims 17, 40 and 48, it recites similar limitation as claim 9 is similarly analyzed.

Regarding claims 21, 44 and 52, it recites similar limitation as claim 13 is similarly analyzed.

Regarding claims 27, 29 and 31, it recites similar limitation as claims 25, 26, 28 and 30 are similarly analyzed.

Regarding claims 32, 66 and 69, it recites similar limitation as claim 1 is similarly analyzed.

Regarding claim 36, it recites similar limitation as claim 5 is similarly analyzed.

Regarding claim 64, it recites similar limitation as claim 63 is similarly analyzed.

Regarding claim 56, it recites similar limitation as claim 25 is similarly analyzed.

Regarding claim 57, it recites similar limitation as claim 26 is similarly analyzed.

Regarding claim 58, it recites similar limitation as claims 25 and 26 are similarly analyzed.

Regarding claim 59, it recites similar limitation as claim 28 is similarly analyzed.

Regarding claim 60, it recites similar limitation as claims 25 and 28 are similarly analyzed.

Regarding claim 61, it recites similar limitation as claim 30 is similarly analyzed.

Regarding claim 62, it recites similar limitation as claims 25 and 30 are similarly analyzed.

Conclusion

5. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7443. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

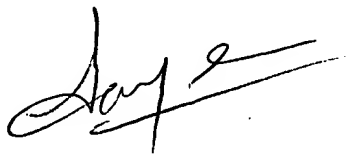
Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.
Status information about the PAIR system, see http:// pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian

Patent Examiner

Group Art Unit 2627

January 30, 2006



SANJIV SHAH
PRIMARY EXAMINER